

Whitepaper

BI Success Beyond Data Visualization: Full Stack BI vs. Data Visualization

Full-Stack vs. Front-End-Only BI Software

Organizations, like the one you're working for, are sitting on a gold mine of data. But most of them, and maybe your company as well, lack the tools to transform it into business results. A business intelligence application can help you uncover those insights. Yet you could miss out on important insights if you just took a "business intelligence" label on a solution at face value.

Here's why.

Some BI products focus only on data visualization. This "front-end approach" can give you views of your data, BUT it skips key optimizing steps like the preparation of data and the creation of a central storage location for data from different sources.

This can have the following consequences:

- Without data preparation, data visualization actions to extract meaning from data are limited, which may prevent you from seeing all the information of value.
- As the number of decentralized data sources grows, it becomes more difficult – or impossible – to keep views of all the data consistent and up to date.

By comparison, a “full-stack solution” or a “single-stack solution”, like Sisense, offers back-end as well as front-end capabilities. The back-end handles your data preparation, creating a central data repository for extensive analytics, and a single version of the truth, while the front-end provides you with consistent data visualization and dashboard reporting.

In short, there are 5 important differences in the two approaches of single-stack BI vs. data visualization only. These are highlighted in the challenges in performing important BI tasks that we discuss below:

- Preparing data
- Joining data sources
- Analyzing data
- Scaling
- Collaboration

Prepare

Automate Data Preparation in a Single Location

The quality of your business intelligence will depend on your data quality, and specifically on having one accurate, complete version of that data.

Data quality is seldom perfect to start with, and the more data and sources you want to use, the more upfront work will be needed to achieve good quality. Data preparation can take up to 80% of the total time needed to produce viable data analytics. Software functionality that accelerates this preparation can, therefore, bring you major savings in time and resources. Your enterprise avoids having to wait for your IT department to prepare the data, and you can make better business decisions, faster.

Visualization Tools: Data Preparation Missing

The need for data preparation cannot be ignored. As your business questions become more complex and your data arrives from increasingly disparate or disorganized sources, somebody or something must tackle the job of cleaning and organize the data. If you do this manually, you will need to repeat the process each time new data is added. A third-party software application may help, although it may require specialist IT skills to use it.

Sisense: Automated Data Preparation

Sisense provides you with an intuitive and comprehensive tool to automate your data preparation. No coding or advanced skills are required. Many data management tasks are handled by built-in components of the software that

Join

Use Data at Both Summary and Detailed Levels

Like many organizations, you will probably use a variety of sources of data, such as Excel files, Salesforce records, and Google Analytics, to name a few, rather than just one source. The data from these sources must be connected properly if it is to be used effectively together for business intelligence. A connection between different data is [called a join](#), but not all joins give the same results.

Visualization Tools: Basic Data Aggregation Only

Software that only provides data visualization often relies on crude aggregation to join data. Granularity (detail) in the data can be lost, limiting your ability to explore and perform calculations in a granular way. This limits you to predefined queries and prevents you from asking ad hoc business questions.

Sisense: Intelligent Joins

Sisense connects all your data sources with a granular row level join. This retains all the details stored in each cell, as well as the logical connections between them. You can then perform unlimited calculations and data exploration on the fly at any level, summary or detailed level. In other words: no data is left behind.

Analyze

Perform Complex Calculations

For the BI results, you want, you may need to perform several calculations simultaneously. As a simple example, you might want to calculate average daily sales per month from the sales data of each day of that month.

This requires an aggregation to calculate the total sum for each day, followed by another aggregation to calculate the average over all the days. Can your BI software handle this?

Visualization Tools: Data Pre-Aggregation Needed

Designed with only reporting in mind, visualization tools restrict the number of aggregations per calculation, sometimes to just one. Data must be pre-aggregated by some other means (possibly manually) if a calculation requires multiple aggregations. In our example above, total sales per day would have to be calculated first and stored separately, before the average daily sales per month could be calculated afterward.

Sisense: Flexible Calculations on the Fly

With Sisense, you can [perform multiple data aggregations](#) within the same calculation. No pre-aggregation is needed. The Sisense software carries out all necessary aggregation while generating the view, taking you directly to the information you wanted in the first place.

Scale

Grow to Many Users, Data Sources & Dashboards

It is a reasonable assumption that your data will grow larger over time – probably much larger. Your BI software must scale with your data, letting you query ever larger numbers of records and fields simultaneously, as well as handling increasing numbers of concurrent queries without any dip in performance.

Remember that a successful BI project can also attract interest and additional users from other parts of your enterprise, further increasing data volumes, sources, and calculations.

Visualization Tools: Problematic Scaling

Visualization tools often have limited data processing capabilities, simply combining and loading all data into the main memory of a machine to try to maintain reasonable performance. However, even after the expense of large amounts of extra RAM, and other additional software and hardware, speed degradation and complex tuning issues can occur.

Sisense: Easy Scaling to Terabytes and More

Sisense uses its [unique proprietary technology](#) which allows it to scale to hundreds of millions of rows, hundreds of fields and queries, and return results instantly. This is achieved by storing data on disk and only using RAM when a query is run - improving performance while reducing hardware requirements and costs.

Collaborate

Share a Single Version of the Truth

As data changes, BI tools must always use the right version. If the updating must be done manually by the IT department, for instance, a bottleneck can soon form. Instead, BI software should allow authorized end-users to easily change or update the datasets, without having to wait till a specialist can find the time.

Visualization Tools: Segmented Working

Visualization tools rely on updating individual, de-centralized data extracts. Each extract must be edited locally on a user's machine, which means ensuring the machine has enough computing power. The context can rapidly become confusing for users as the number of extracts increases. This can lead to a lack of synchronization between extract updates, and the formation of data silos. Views of the organization and its data become blinkered, and overall data-handling errors increase.

Sisense: Centralized Collaboration

Sisense lets you work within the same, single data repository called an [ElastiCube](#), instead of juggling multiple data extracts. This centralization ensures that you and other users always work with the same version of the truth and that you can combine data anyway you need. Your queries always run on the server, freeing up your end-user device, and scaling properly for many different use cases

Summary

Your choice of a business intelligence solution will depend on your needs and your goals. As you discover new sources of data to fuel your data analytics and generate new business insights, your BI solution will need to manage these disparate sources efficiently. It should also give you access to as much or as little data detail as you need, and allow you to ask new business questions of your data as markets and objectives change. Scaling cost-effectively to consistently handle growth in the volume and variety of data will also be an important consideration.

A single-stack solution like Sisense that combines both back-end and front-end functionality addresses all these requirements. It goes beyond front-end only data visualization products, to allow your enterprise to make the most of the current and future business intelligence possibilities.

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